CLAIMS

1. A spread-spectrum signal receiver comprising:
a PN sequence generator for generating a PN sequence;
a correlator coupled to the PN sequence generator and configured to produce a despread signal by correlating the generated PN sequence and a received spread-spectrum signal; and
processing circuitry coupled to the correlator for processing the despread signal to extract time information therefrom.

2. The receiver of claim 1, wherein the despread signal comprises a pilot signal, and the processing circuitry is configured to extract time information from the pilot signal.

3. The receiver of claim 1, wherein the despread signal comprises a sync signal, and the processing circuitry is configured to extract time information from the sync signal

4. The receiver of claim 3, further comprising a Walsh-code generator coupled to the processing circuitry and configured to generate an orthogonal code stream comprising 32 binary ones followed by 32 binary zeroes; and wherein the processing circuitry is configured to mix the despread signal with the orthogonal code stream to enable extraction of time information from the sync signal.

5. The receiver of claim 1, wherein the despread signal is synchronized to UTC time and the processing circuitry is configured to extract UTC time from the despread signal.

6. The receiver of claim 1, further comprising an RF receiver coupled to the signal input and configured to provide the spread-spectrum signal thereto.

7. The receiver of claim 6, wherein the RF receiver comprises:
a first oscillator configured to generate a first reference frequency; and

a first mixer unit coupled to the first oscillator and connected between the antenna and the correlator, and configured to downconvert an RF signal from the antenna to an intermediate-frequency spread-spectrum signal.

8. The receiver of claim 6, wherein the RF receiver comprises:
a first oscillator configured to generate a first reference frequency;
a first mixer unit coupled to the first oscillator and connected between the antenna and the correlator, and configured to downconvert an RF signal from the antenna to an baseband spread-spectrum signal.

9. The receiver of claim 1, wherein the PN sequence generator is configured to generate a PN sequence with a length of 32,768 chips.

10. The receiver of claim 9, wherein the PN sequence generator is configured to generate the PN sequence at a chip rate between 1 Mchips/sec and 2.5 Mchips/sec.

11. The receiver of claim 9, wherein the PN sequence generator is configured to generate the PN sequence at a chip rate of 1.2288 Mchips/sec.

12. The receiver of claim 1, wherein:
the PN sequence generator modulates the PN sequence by a Walsh code comprising 32 binary ones followed by 32 binary zeroes from a set of length-64 Walsh codes; and
the PN sequence and the Walsh code each have a chip rate of 1.2288 Mchips/sec.

13. A method of extracting time information from a spread-spectrum signal, the method comprising:
generating a PN sequence;
correlating the generated PN sequence and a spread-spectrum signal to produce a despread signal;
processing the despread signal to extract time information therefrom.

14. The method of claim 13, wherein the despread signal comprises a pilot signal, and the method comprises extracting time information from the pilot signal.

15. The method of claim 13, wherein the despread signal comprises a sync signal, and the method comprises extracting time information from the sync signal.

16. The method of claim 15, further comprising:
generating an orthogonal code stream comprising 32 binary ones followed by 32 binary zeroes; and mixing the despread signal with the orthogonal code stream to enable extraction of time information from the sync signal.

17. The method of claim 13, wherein the despread signal is synchronized to UTC time and the method comprises extracting UTC time from the despread signal.

18. The method of claim 13, wherein the PN sequence is generated with a length of 32,768 chips.

19. The method of claim 17, wherein the PN sequence is generated at a chip rate between 1 Mchips/sec and 2.5 Mchips/sec.

20. The method of claim 18, wherein the PN sequence is generated at a chip rate of 1.2288 Mchips/sec.

21. The method of claim 13, further comprising modulating the PN sequence by a Walsh code comprising 32 binary ones followed by 32 binary zeroes from a set of length-64 Walsh codes, and wherein the PN sequence and the Walsh code each have a chip rate of 1.2288 Mchips/sec.

22. A spread spectrum communication system comprising:
a plurality of base stations each operable for communication with at least one user unit;
two receiving systems each for receiving independently a user unit signal transmitted from a user unit as a direct sequence spread spectrum signal within which an information signal is modulated; and
a diversity combiner coupled to the two receiving system for combining signals received thereby to reconstruct the user unit signal.

23. The system of claim 22, wherein at least one of said base stations comprises said two receiving systems.

24. The system of claim 22, wherein one of said two receiving systems is provided in one of said plurality of base stations and the other of said two receiving systems is provided in another of said plurality of base stations.

25. A communications system comprising:
a first cell site unit configured to communicate through a direct-sequence spread-spectrum digital wireless link with at least one mobile unit; and
a second cell site unit configured to communicate through a direct-sequence spread-spectrum digital wireless link with at least one mobile unit, and wherein the first and second cell site units are synchronized to each other.

26. The communications system of claim 25, wherein the first and second cell site units are synchronized to each other by way of a common time reference.

27. The communications system of claim 25, wherein the first and second cell site units are synchronized to Universal Coordinated Time (UTC).

28. The communications system of claim 25, wherein the first and second cell site units each comprise a GPS receiver for receiving a GPS signal and wherein the first and second cell site units are synchronized to each other by way of the GPS signal.

29. The communications system of claim 25, wherein:

the first cell site is configured to generate a first spreading sequence for use in the direct-sequence spread-spectrum digital wireless link; and

the second cell site is configured to generate a second spreading sequence for use in the direct-sequence spread-spectrum digital wireless link, which second spreading sequence is a synchronized, time-shifted version of the first spreading sequence.

30. The communications system of claim 29, wherein:

the first cell site is configured to generate a pilot signal from the first spreading sequence; and

the second cell site is configured to generate a pilot signal from the second spreading sequence.

31. The communications system of claim 29, wherein:

the first cell site is configured to generate a sync signal from the first spreading sequence; and

the second cell site is configured to generate a sync signal from the second spreading sequence.

32. The communications system of claim 29, wherein:

the first cell site is configured to generate the first spreading sequence using a first code polynomial; and

the second cell site is configured to generate the second spreading sequence using the first code polynomial.

33. The communications system of claim 25, wherein the first and second cell site units each generate a synchronized PN sequence.

34. The communications system of claim 33, wherein the synchronized PN sequence generated by each cell site unit has a chip rate of 1.2288 Mchips/sec.

35. The communications system of claim 33, wherein the synchronized PN sequence generated by each cell site unit has a length of 32,768 chips.